

FIG. 1

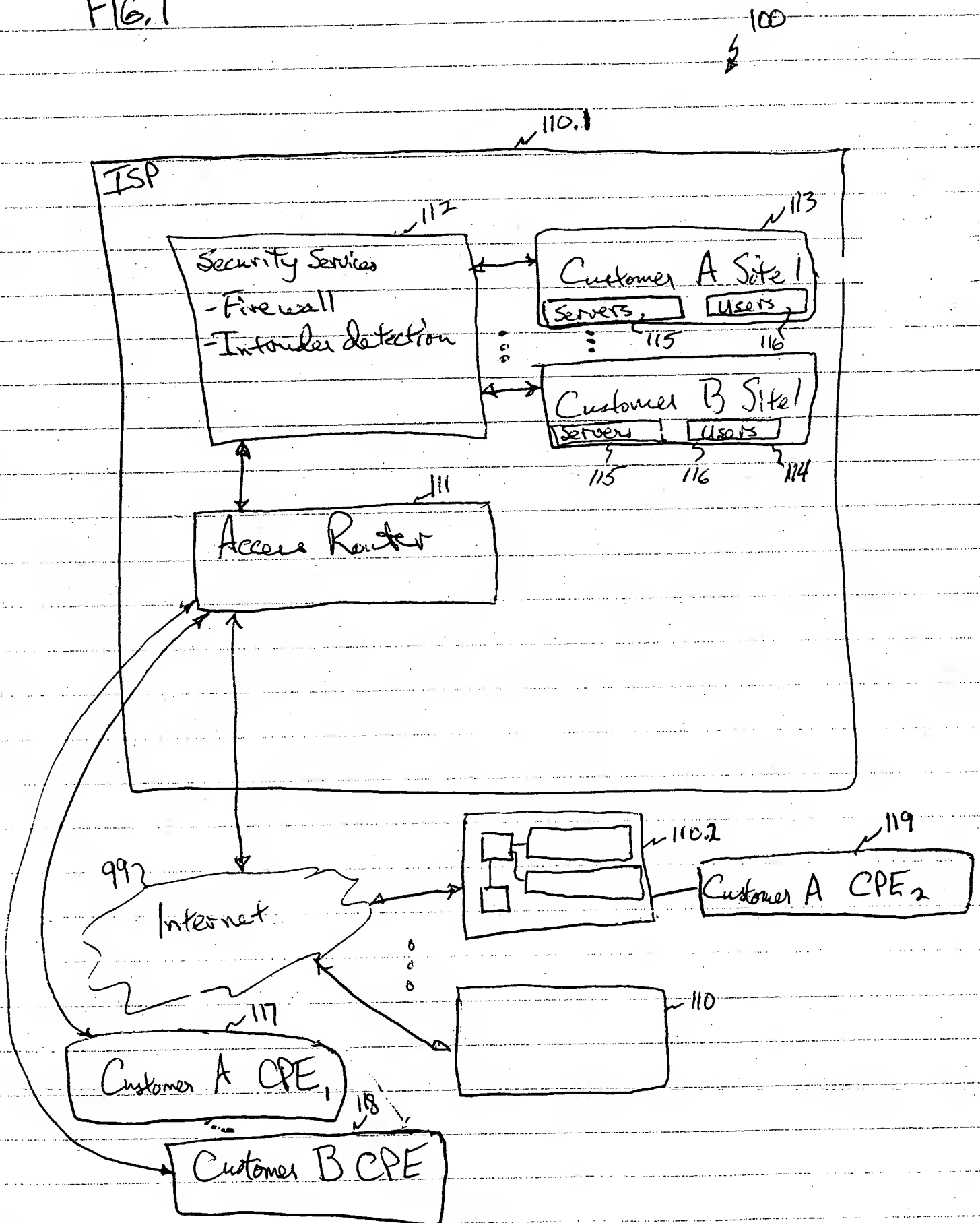
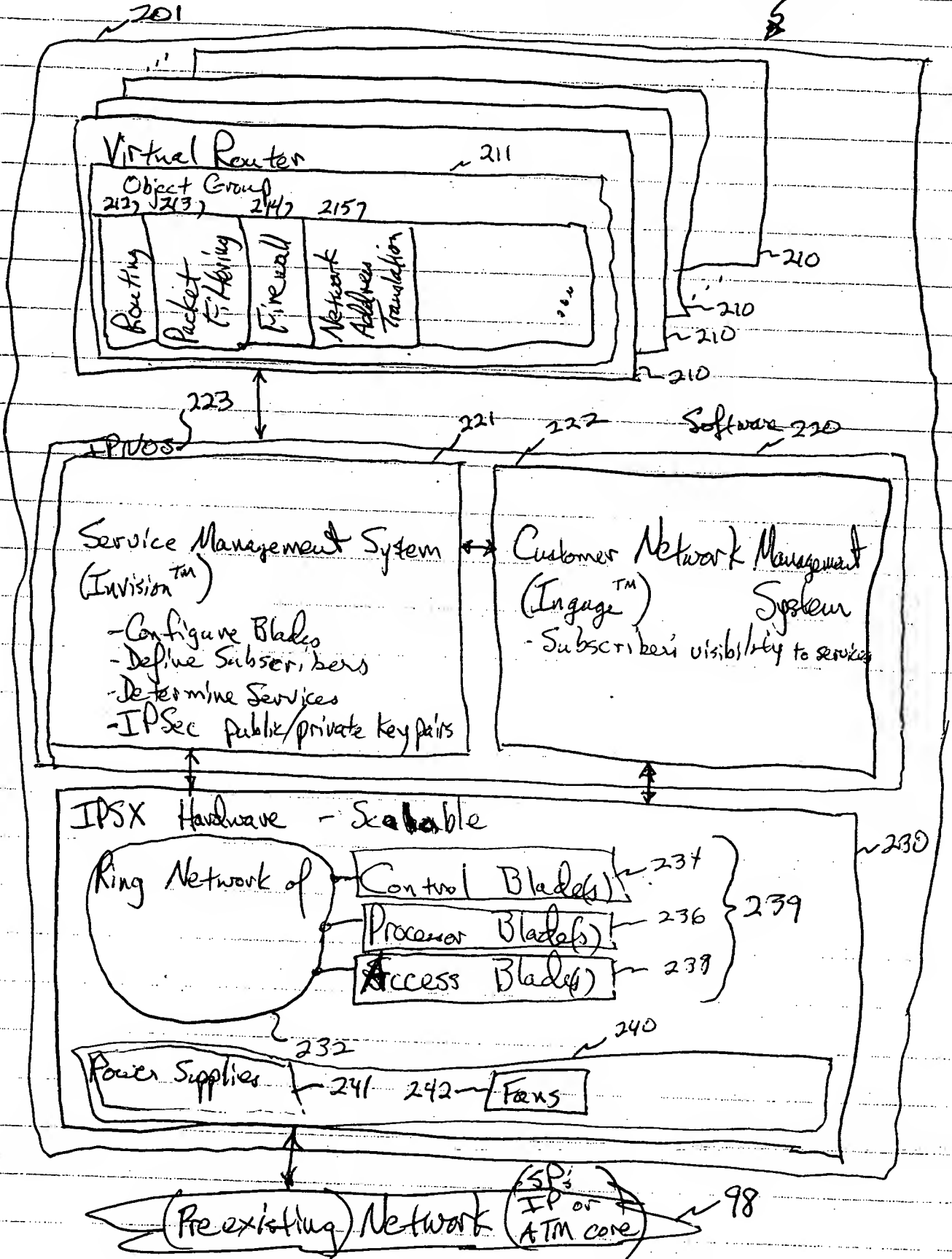


FIG. 2

SP Network 200



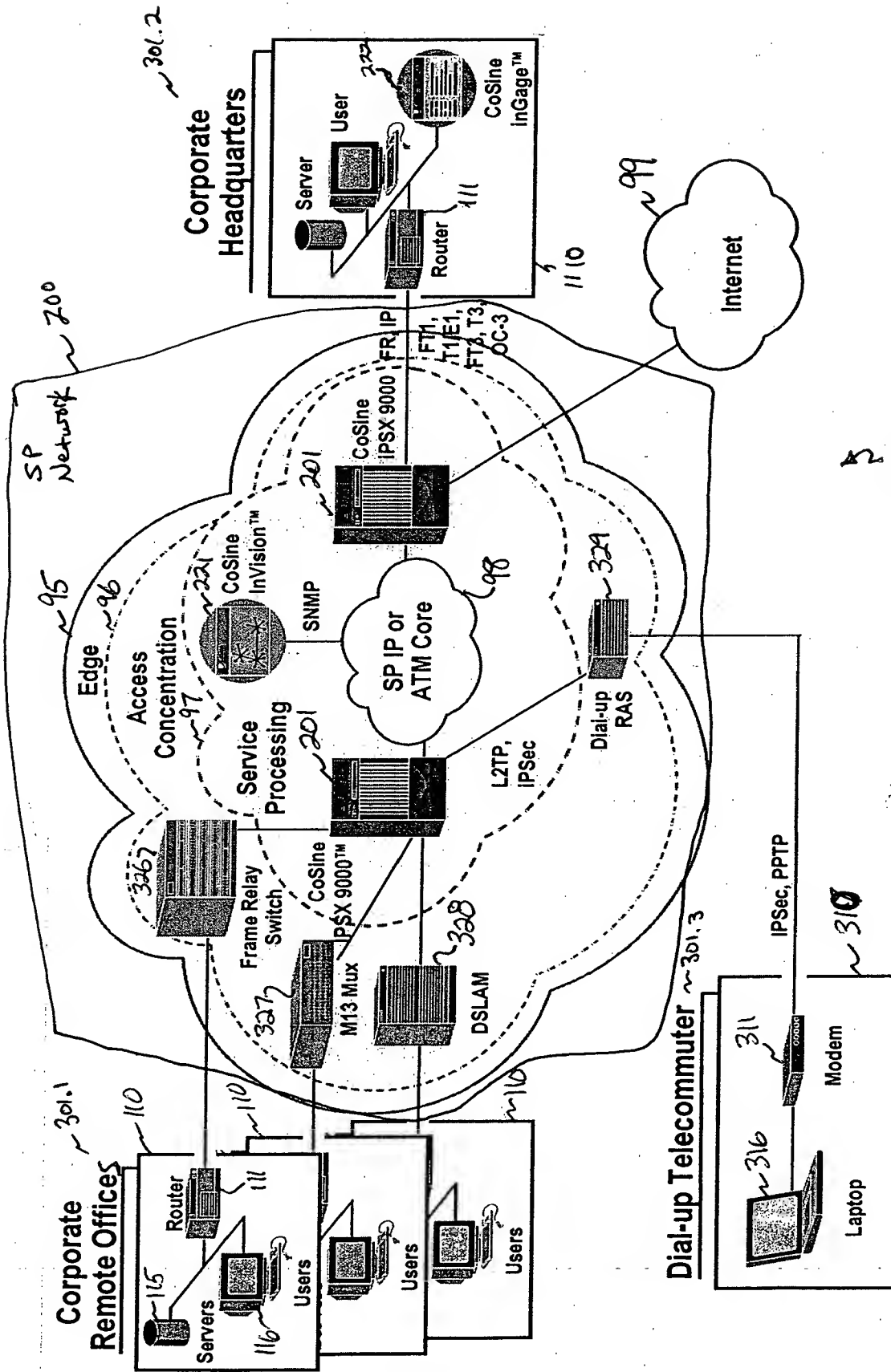
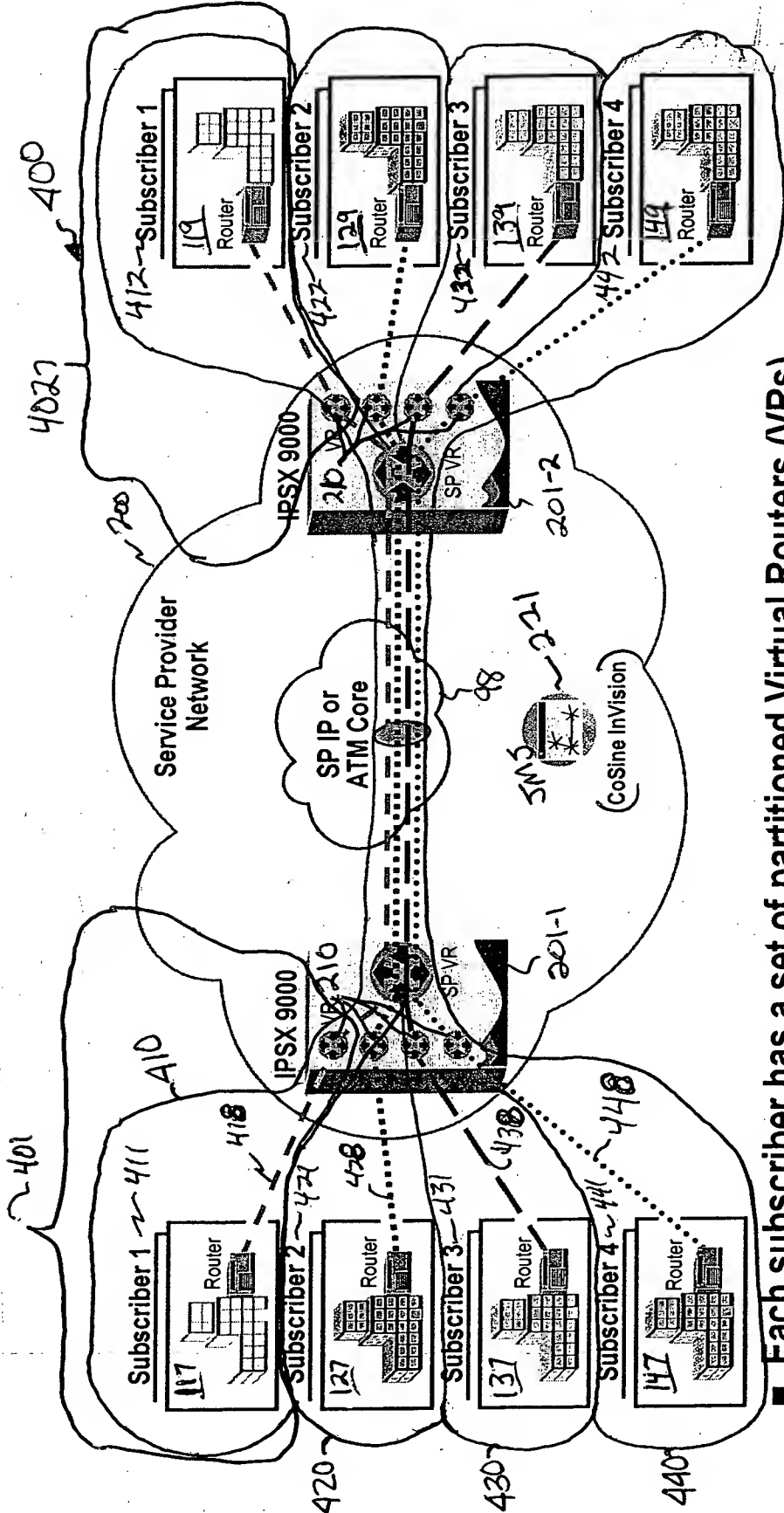
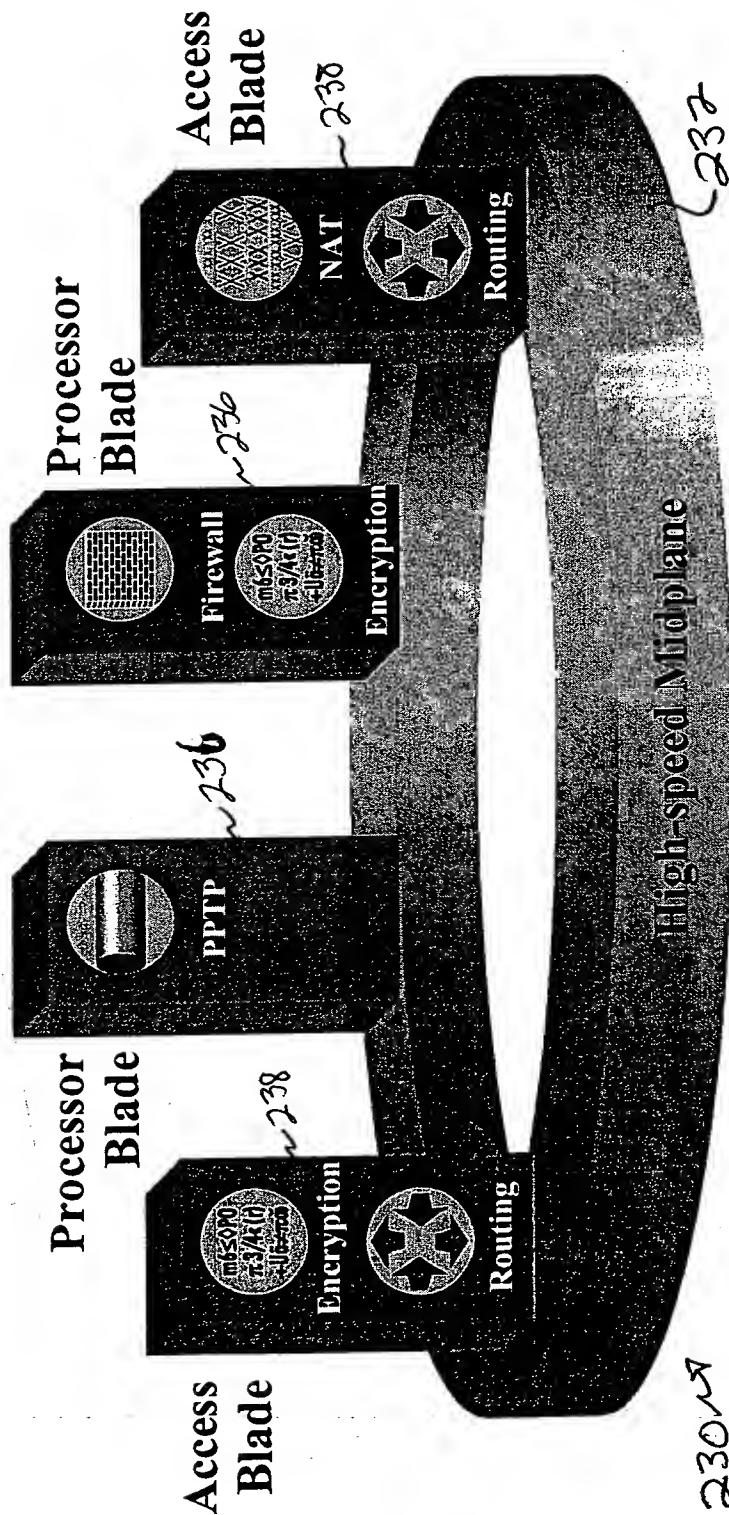


Fig. 3



- Each subscriber has a set of partitioned Virtual Routers (VRs)
- Each VR is the equivalent of an independent hardware router
- VR as an object group enables customized services per subscriber
- InVision allows ease of service provisioning and maintenance of services across all IPSX units in a SP network
- IP Network Operating System's (IPNOS) open Application Program Interface (API) enables new services to be continually added to the platform

FIG. 4



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FIG. 5

600

239 Control Blade can sense an unsecured Service Blade and remove it from the midplane without packet loss

Dual hot-swappable variable speed fan trays *238*

SONET 1 + 1 Line Protection Switching

238 Dual counter-rotating rings support primary and protect redundancy

Integrated metallic cross connect enables DS3 access Blade auto-failover without touching facility

NEBS Level 3 compliance, Y2K

239 All Service Blades automatic failover from primary to protect

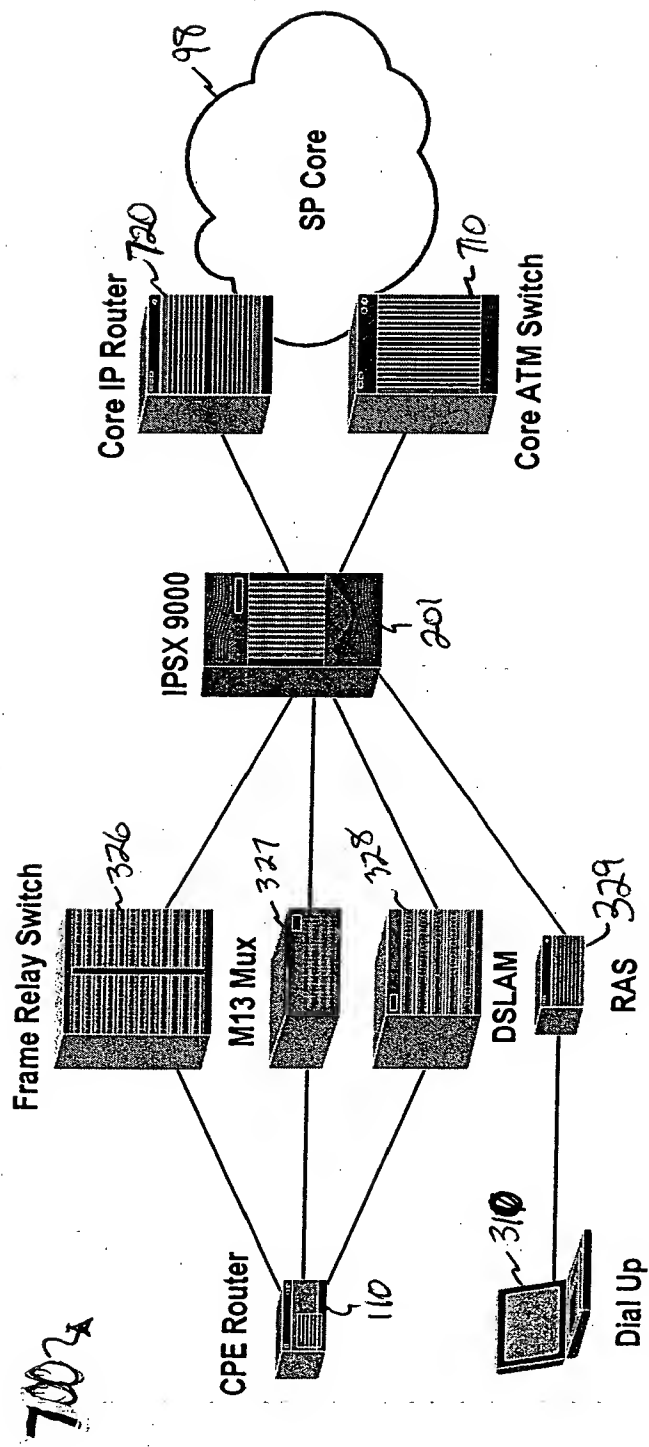
All Service Blades hot-swappable *239*

Software updates without system downtime

Hot swappable, redundant, automatic failover, AC and/or DC power supplies *241*

230 CoSine IPSX 9000

Fig. 6



- Support for a long list of technology standards
- Interoperates with existing access concentration and core network elements
- Offer interworking between Frame Relay and IP networks
- Network Address Translation (NAT) enables enterprise subscribers to leave their network addressing untouched
- Merge IP and legacy networks into one with COS guarantees

FIG. 7

Hardware:

- ▼ 26-slot, two-sided chassis ~ 831
- ▼ 22 Gbps packet ring midplane ~ 832
- ▼ Three types of Service Blades ~ 239
 - Control ~ 234
 - Access ~ 238
 - Processor ~ 236
- ▼ Specialized processing Daughter Cards for Service Blades
- ▼ Power supply system ~ 240

Software

- ▼ IP Network Operating System (IPNOS) ~ 223
- ▼ Virtual Routing ~ 810
- ▼ IP Service Suite ~ 820
 - IPsec (Dial and Dedicated) ~ 821
 - Application Proxy Firewall ~ 822
 - Network Address Translation (NAT) ~ 823
 - PPTP Tunnel Termination ~ 824
 - Bandwidth Management ~ 825
 - Multiprotocol Label Switching (MPLS) ~ 826
 - Frame Relay to IPsec Interworking ~ 827

FIG. 8

FIG. 9

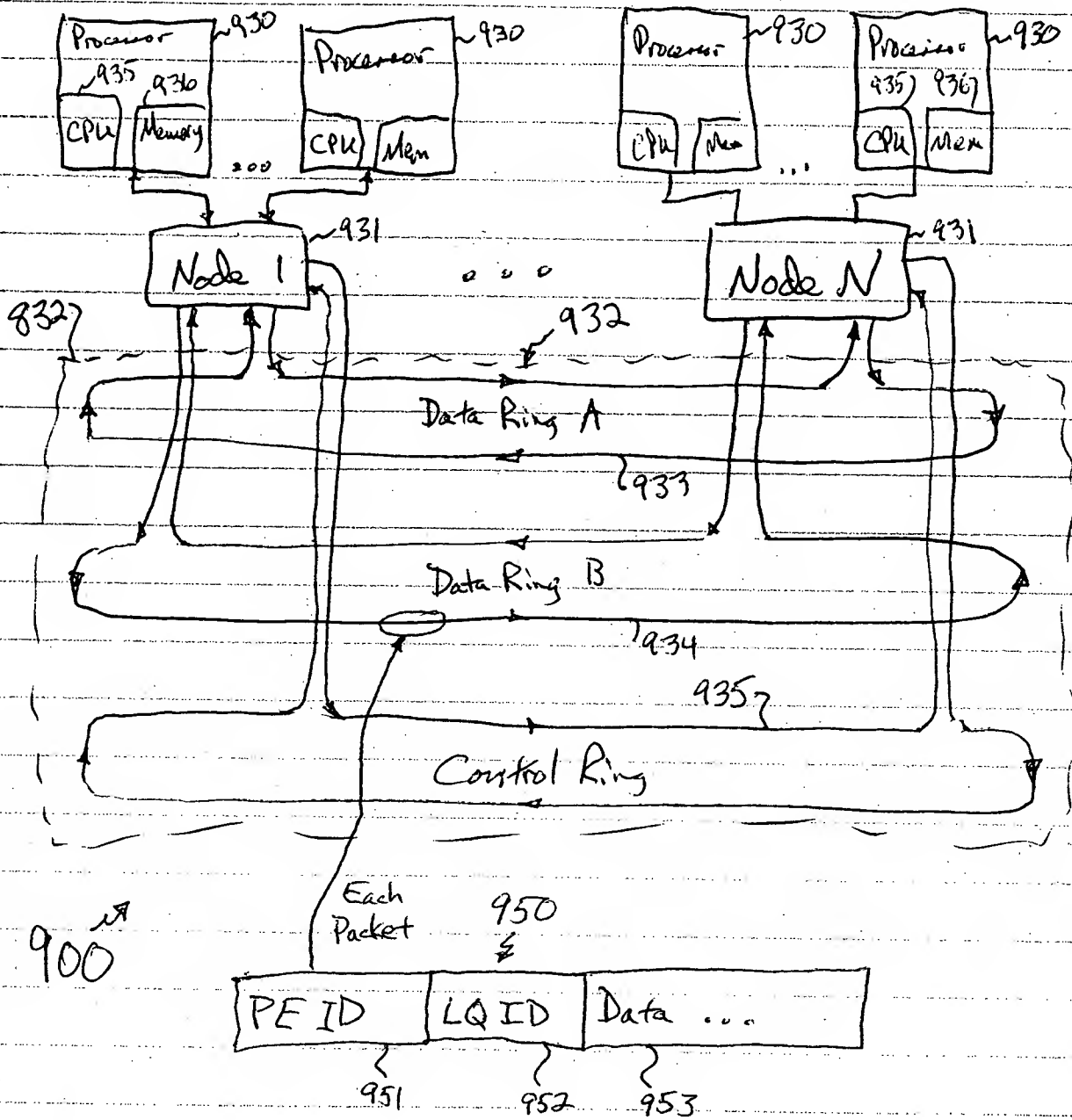


FIG. 10

10003

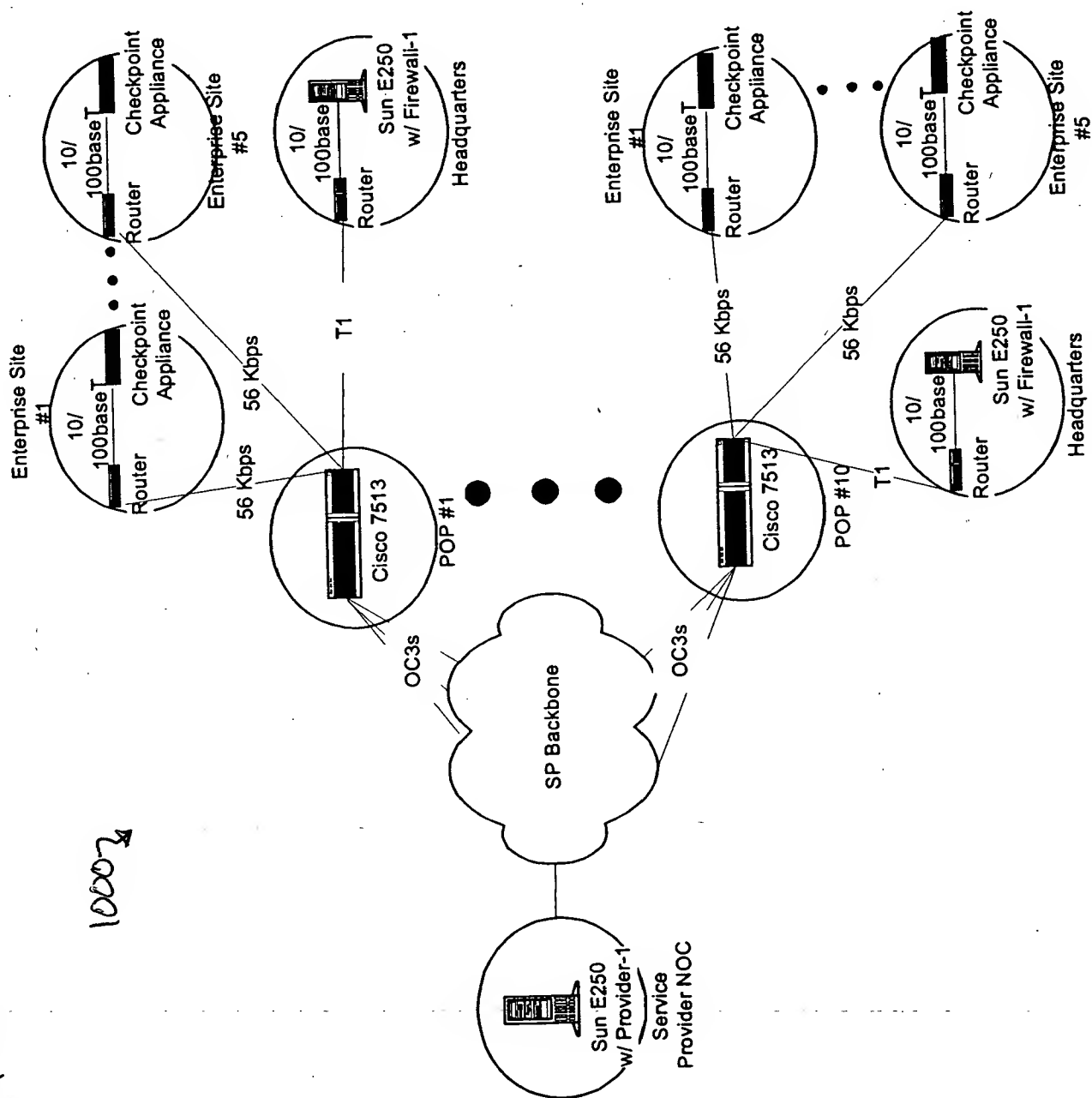
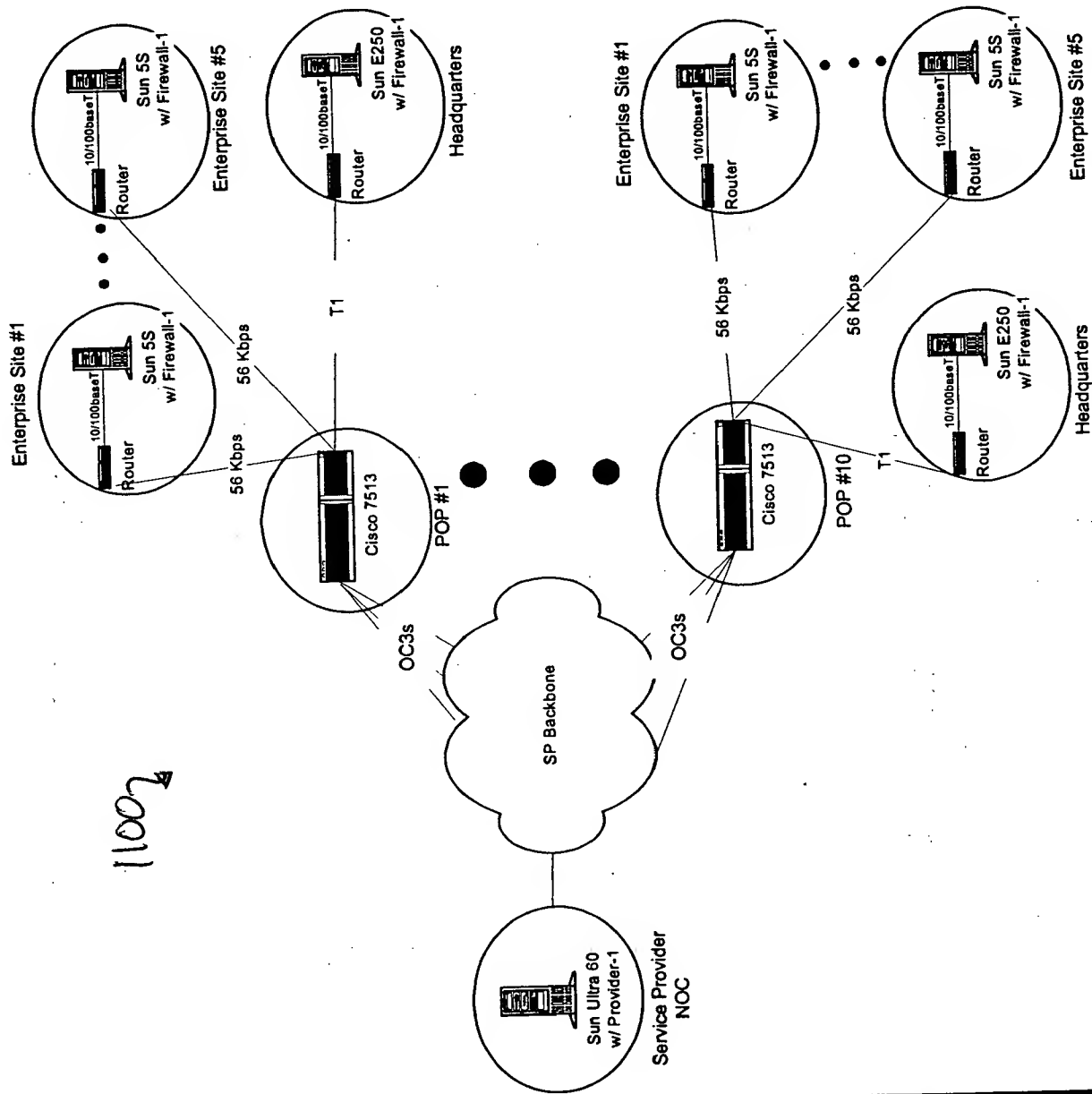


FIG. 11



12/10/17

12007

Diagram illustrating a network architecture for a Service Provider (SP) Backbone connecting multiple Enterprise Sites and Headquarters.

The central component is the **SP Backbone**, which is connected to a **Windows NT Server w/ WG NOC Control Center** and a **Service Provider NOC**.

The SP Backbone is connected to two **POP #1** and **POP #10** (Points of Presence) via **OC3s** (Optical Carrier 3rd level) links.

Each POP is connected to multiple Enterprise Sites and Headquarters via **T1** and **56 Kbps** links.

The Enterprise Sites and Headquarters are represented by circles containing the following components:

- Enterprise Site #1** and **Enterprise Site #5** (Left side):
 - Router
 - Firebox II Plus
 - 10/100baseT
- Headquarters** (Right side):
 - Router
 - Firebox II Plus
 - 10/100baseT

The diagram shows a symmetrical structure with multiple Enterprise Sites and Headquarters connected to the SP Backbone through POPs.

FIG. 13

13002

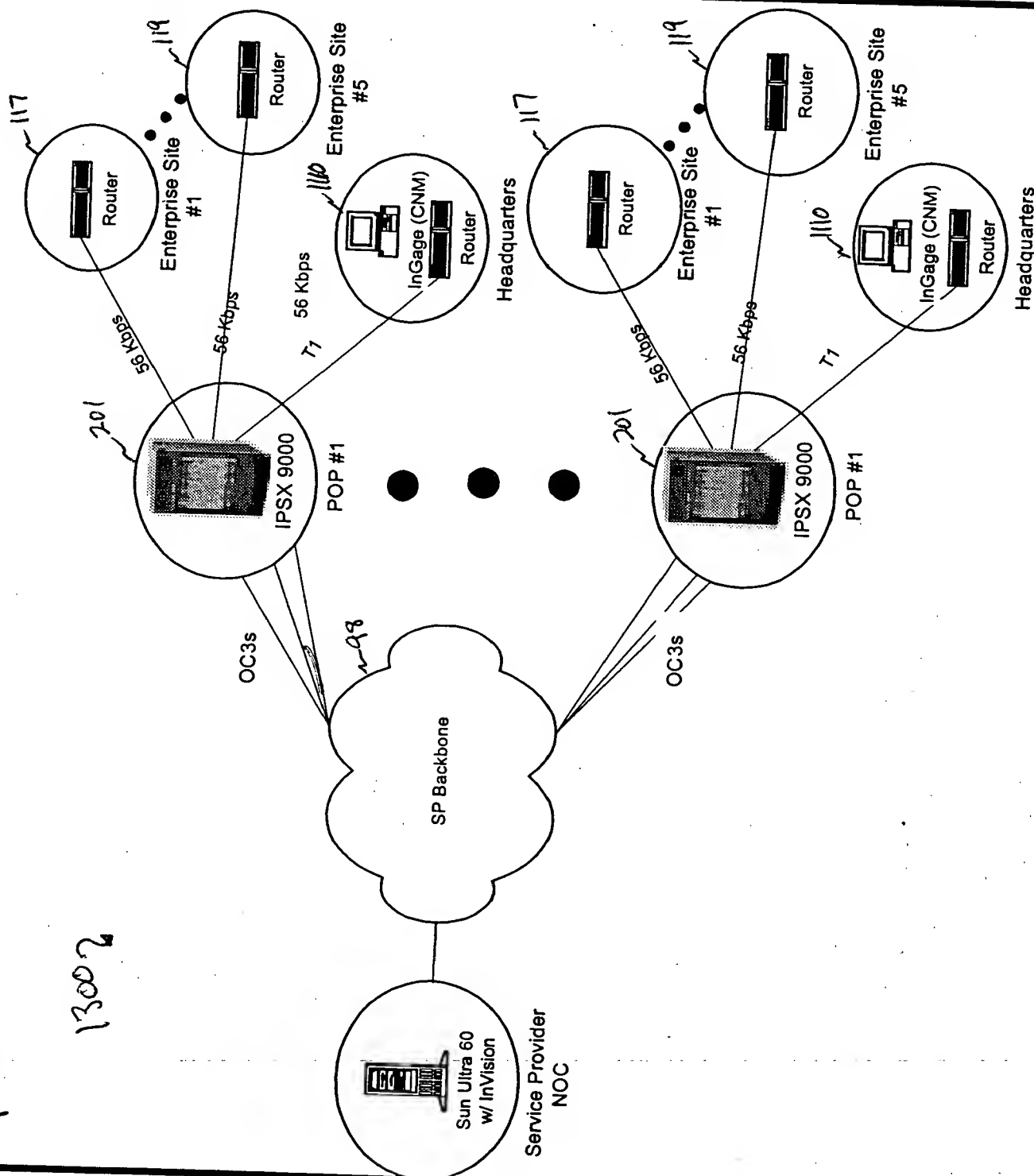


FIG. 14

14003

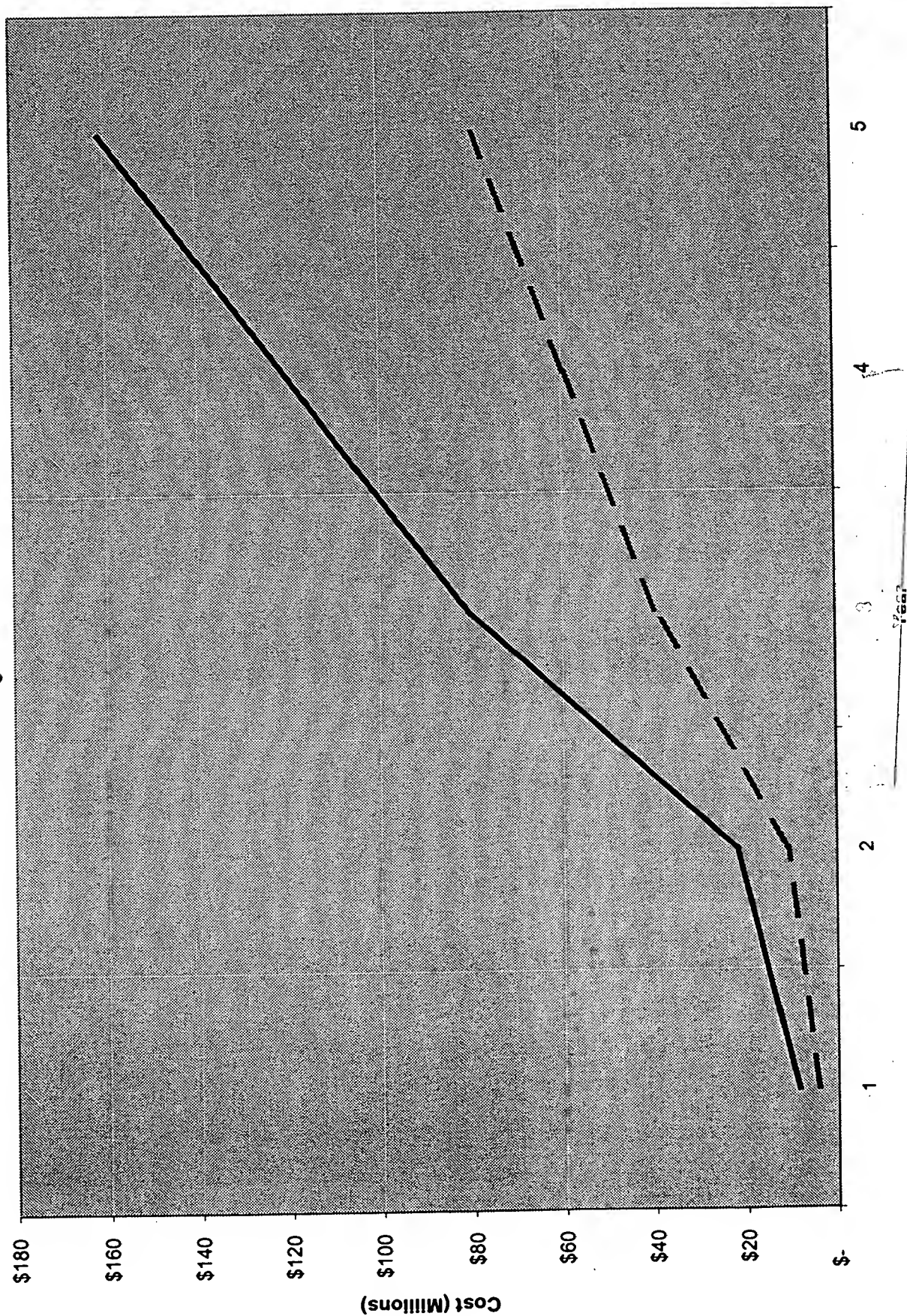


FIG. 15

15007
SCANNED, #

